

Quick Reference

Please note that you must read the full Call document for guidance before submitting your proposal

EPSRC: Interdisciplinary Research Collaboration (IRC) in Targeted Therapeutic Delivery Technologies

Call type: Invitation for outlines

Outline closing date: 16.00, 02 November 2017

Funding Available: £10 million is available to support one IRC.

How to apply: Two stage call with a mandatory outline and invited full proposal stage.

Assessment Process: Outline proposals will be assessed anonymously by an expert panel. Selected proposals will be invited to submit a full proposal; this will be assessed by expert peer review and an interview panel.

Key Dates:

Activity	Date
Deadline for Outline Proposals	2 November 2017
Outline Expert Panel	Early December 2017
Deadline for Full Proposals	13 March 2018
Full Proposal Expert Peer Review	April – June 2018
Full Proposal Interview Panel	Mid July 2018

Additional information:

Only one submission as lead per institution. Only one application form should be submitted per bid. The outline stage of this call will be conducted anonymously. It is the lead institution's responsibility to make sure that their application contains no information that would allow the investigators and institutions involved to be identified.

The peer review of the outline proposals will be delivered in partnership with AstraZeneca and GlaxoSmithKline. This is to ensure that all shortlisted proposals are addressing challenges of genuine need and to reduce the number of

speculative approaches these companies receive for project partner support. This move also aims to provide a more level playing field for applicants whether or not they have previous experience of collaborating with either of these two companies.

The involvement of AZ and GSK in the outline panel will still enable these companies to work with shortlisted applicants in the preparation of a full bid. There will be no obligation on applicants to partner with AZ or GSK (and vice versa) should they be invited to submit a full proposal. Nor is this intended to preclude partnership with other project partners, including other businesses. There will be an opportunity for other businesses to register their interest with EPSRC when the call opens by emailing Healthcare@epsrc.ac.uk.

This call document describes the initial outline stage of the call. Additional guidance for full proposals will be issued to shortlisted applicants.

Contacts:

- Dr Stephanie Newland (Email: Stephanie.Newland@epsrc.ac.uk - Phone: 01793 444 134)
- Dr Annette Bramley (Email: Annette.Bramley@epsrc.ac.uk - Phone: 01793 444 4074)
- Healthcare Technologies Theme (Healthcare@epsrc.ac.uk)



Engineering and Physical Sciences
Research Council

EPSRC: Interdisciplinary Research Collaboration (IRC) in Targeted Therapeutic Delivery Technologies

Call type: Invitation for outlines

Closing date: 16.00 on 02 November 2017

Related themes: All themes

Summary

Proposals are invited for a large-scale, interdisciplinary research collaboration (IRC) to address research challenges in targeted therapeutic delivery technologies (within Healthcare) through a critical mass approach.

A budget of **up to** £10 million (at 80% FEC) is available to support one IRC for 5-7 years. This includes using 10% of the total grant value for drawing in expertise from outside the initial collaborations (both academic and other stakeholders).

Applicants submitting an outline are strongly advised to discuss their proposal with EPSRC during the initial stages of the outline preparation.

An institution may only lead on one bid, but may be a partner in more than one.

Each bid is expected to consist of one lead institution, with a small number of collaborative institutions that bring together world leading research expertise in the disciplines required to deliver the breadth of research proposed. Single institution bids will not be considered. In addition, bids are expected to have a user-engagement strategy and the IRC will be expected to use the Partnership Resource funding (please see the Funding Available section for further information) to bring in new partners over the lifetime of the award.

Only one application form should be submitted per bid.

This call has two stages. In the first stage, an independent expert panel will evaluate and subsequently select a number of anonymous outline applications (i.e. without the panel knowing the identities of the institutions) that will be taken forward to stage two of the process. Stage two will be full applications assessed by postal peer review followed by an interview.

Background

This call is being supported by EPSRC's Healthcare Technologies theme. The Healthcare Technologies theme supports research across EPSRC's remit with the aim of accelerating translation to healthcare application by increasing the engagement of clinicians, businesses and other stakeholders with the research

we fund. This call is for a large, interdisciplinary research collaboration (IRC) which will look to build critical mass and partner with both industry and end-users (such as clinicians) in order to meet the theme's aims.

Scope of Call

EPSRC wishes to focus UK research excellence and build critical mass in technologies for targeted therapeutic delivery in order to support novel, truly revolutionary and impactful methods of drug delivery that will improve patient outcomes and support growth in an important industrial sector for the UK.

There are a range of potent chemicals that have the potential to be medicines. However, challenges associated with targeted delivery of the medicine means that often we have to expose the whole body to these chemicals. This can result, for example:

- In harmful side-effects;
- In the dose being limited to reduce the extent of the systemic toxicity; however as a result the optimum level of engagement with the target may not be achieved.

This call is aligned to the EPSRC Delivery Plan through the Healthy Nation (<https://www.epsrc.ac.uk/about/plans/deliveryplan/prosperityoutcomes/health/>) and aims to develop advanced delivery technologies for administering novel therapeutic agents more effectively, targeting specific sites, allowing co-delivery of multiple agents, or providing controlled release. By enabling the temporal and spatial delivery of the therapeutic to the diseased cells or tissue of relevance in the human body to be controlled precisely, maximum therapeutic efficacy may be achieved while sparing normal tissue from any toxic effects associated with the therapeutic agent.

Following engagement with a range of stakeholders from academia, industry and other funders in this area the following areas of research have been identified that may benefit from multidisciplinary research coordinated using a critical-mass based approach:

- Designing and creating novel formulations at all scales from nanomedicines to large molecules;
- Characterising the drug vehicle;
- Manufacturing of novel therapeutic medicines (ideally with renewable materials and at affordable costs);
- Engineering and Physical Sciences for mediated drug delivery, for example encapsulation, magnetic, ultrasonic & photodynamic approaches;
- Characterisation and metrology of targeted therapies in humans.

We will also welcome applications for world leading collaborations which seek to address challenges of direct relevance to Targeted Therapeutic Delivery Technologies which incorporate elements outside of these topics, provided the timeliness, novelty and potential impact of the research can be demonstrated.

Potential IRCs should have a clear vision for the research programmes and how their approach can contribute to transforming targeted therapeutic delivery technologies. They are expected to demonstrate strong and appropriate engagement with industry and clinical expertise, in order for the outcomes to be clinically relevant, usable and scalable. The IRC is expected to bring together the broad range of academic disciplines necessary to address the challenges associated with targeted therapeutic delivery technologies. While a multidisciplinary collaboration is essential, the IRC will be expected to undertake basic and applied research that falls primarily within the remit of EPSRC.

Scientific Scope:

Applications to this call must be clearly aligned to the Healthcare Technologies theme Grand Challenges strategy. EPSRC reserves the right to reject applications which do not fit the remit of the Healthcare Technologies theme. Applicants should outline how their proposed research will specifically address the challenge of **Developing Future Therapies**: Supporting the development of novel therapies with technologies to enhance efficacy, minimise costs and reduce risk to patients.

Applicants should also state how they will advance any of the cross-cutting research capabilities relevant to their proposal. The six capabilities are:

- **Advanced Materials Development:** Characterisation and processing of advanced materials with novel chemical, physical or mechanical properties, for health-related applications.
- **Disruptive Technologies for Sensing and Analysis:** Innovative sensing systems or analytical technologies that could have a transformative impact on prediction, diagnosis and monitoring in healthcare.
- **Future Manufacturing Technologies:** Technologies that will enable health-related manufacturing processes, products and systems to function with high precision, efficiency, reliability and repeatability.
- **Medical Device Design and Innovation:** Design, development, evaluation and production of cost-effective, reliable and effective medical devices.
- **Novel Computational and Mathematical Sciences:** Development of innovative computational and mathematical methods for prediction, analysis and modelling in healthcare.
- **Novel Imaging Technologies:** Development of next generation imaging technologies for diagnostic, monitoring and therapeutic applications; with improved accuracy, affordability and incorporating new modalities.

For more information on the challenges and cross cutting themes please see: <http://www.epsrc.ac.uk/research/ourportfolio/themes/healthcaredtechnologies/strategy/>

The primary aim of the call is to support the targeted delivery of medicines rather than non-medicinal interventions. The following are outside the scope of this call:

- Surgeries, radiotherapies and other similar approaches

- Advanced/regenerative therapies, which are covered by the UK Regenerative Medicine Platform
- Drug discovery

The development of novel imaging technologies and novel diagnostics may be included where integral and necessary for the targeted therapeutic delivery; however it is not expected that these would form a large part of the work programme of an IRC in Targeted Therapeutic Delivery Technologies.

Please note that the IRC must complement and not compete with or duplicate other research or initiatives in the UK, such as Programme Grants, NetworksPlus, Manufacturing Hubs. The funded IRC will be expected to take a leadership role in Targeted Therapeutic Delivery Technologies in the UK and as such is expected to work constructively with other funded groups through regular dialogue, workshops etc.

Non- Scientific Scope:

There are some overarching principles which applicants should be aware of:

- We expect the successful IRC to be led by a Principal Investigator with a strong track record of research in a relevant field and with a demonstrable ability to collaborate effectively with researchers from other disciplines.
- The Principal Investigator should be supported by a number of Co-Investigators and project partners such that the collective expertise of the research team covers all key areas of research relevant to the IRC.
- The application should have one lead institution and typically several collaborative institutions.
- The application must be collaborative and multi-disciplinary in nature. The expectation is to bring together relevant disciplines and users to address the research challenges of this area.
- A key aim of the IRC should be to build critical mass and provide focus on creating greater impact more quickly.
- The IRC would be expected to bring in new UK research partners throughout the grant to complement and strengthen the expertise working on the challenges described above.
- Collaborations are expected with industry, clinicians, policy makers, and with other significant research and development endeavour within Healthcare that could enable greater translation to product or practice.
- It is expected that the successful IRC Leadership Team would engage with EPSRC and with wider stakeholders in community building and strategy development and delivery.

Impact from Healthcare Technologies Research

EPSRC wishes to ensure that the research it supports through its Healthcare Technologies theme has the greatest chance of achieving a positive impact in human health and wellbeing. The pathway to impact in health is often longer and more complicated than is seen in other sectors and poses many barriers less commonly encountered by engineering and physical sciences researchers. Given this, there is a need for researchers working in this area to consider more carefully how they will undertake their work in a manner that maximises the opportunities for impact to arise from it. In particular, it was clear during the development of the Healthcare Technologies strategy that a number of topics were of particular importance. These are highlighted as part of the Impact and Translation Toolkit:

(<http://www.epsrc.ac.uk/research/ourportfolio/themes/healthcaretechnologies/strategy/toolkit/>)

Applicants must consider how these topics relate to their proposed programme of work and if they are relevant, describe in their proposal how they will be addressed throughout the award. Not all topics will relate to every project and researchers need not address those which are not. There is no expectation that researchers will undertake all impact activities themselves nor is there an expectation that researchers will develop extensive expertise in all the areas noted in the toolkit. However, applicants should consider what skills, knowledge and expertise are required and how these will be brought to the project through collaboration, training, consultation or other means.

Funding available

A maximum of **£10 million** at 80% FEC is available for this call. EPSRC expects to fund only one IRC. The IRC will last 5-7 years, and a midterm review will be undertaken. EPSRC reserves the right to return or reject full proposals without reference to peer review if the total resource requested exceeds £10million.

Applicants are asked to ensure that 10% of their total grant value is dedicated Partnership Resource funding for engagement with partners outside the scope of the initial collaboration. Applicants should have a clear plan of the mechanisms they use to identify where the funding goes.

The Partnership Resource funding could be used for some or all of the following activities:

- Working with new academic partners;
- Pump priming activities;
- Workshop to encourage new collaborations;
- Match funding for projects with partners outside of EPSRC's remit, or those further down the translational pathway.

Core Activity of the Interdisciplinary Research Collaborations

Core activities should include:

- Transformative, challenge driven research in the engineering and physical sciences remit;
- Strong engagement with both industry and end-users (such as clinicians, charities etc.);
- Appropriate engagement across the breadth of research disciplines necessary to address the research challenge effectively;
- Public Engagement appropriate to research proposed;
- Engaging in networking and community building, as a leading player within EPSRC's Healthcare Technologies portfolio;
- Addressing the issue of long-term sustainability. The award will be for a period of 5-7 years, after which there is no guarantee of ring-fenced funding for the IRC. Applicants should consider how they will maximise the impact of the research funded during the grant and likely sources of any follow-on funding they might wish to access.
- The IRC will be expected to actively develop and promote the careers of its team members, both named investigators and research assistants.

Equipment

EPSRC has aligned a restricted capital budget to this call which will be used to support equipment requests over £10K. The capital budget will be allocated to successful full proposals based on the advice of peer review and discussions with the applicants and partners. Due to limited capital budget, EPSRC reserves the right to negotiate the level of EPSRC contribution to capital items.

Requests for equipment over the current OJEU threshold on proposals associated with this call will **not** need to go through the separate Strategic Equipment Panel but will be considered as part of the assessment of the EPSRC Interdisciplinary Research Collaborations proposal. (See Infrastructure Strategy Plan section for more information.) Please note: This call is not for the creation of a national equipment facility or service.

Eligibility

For information on the eligibility of organisations and individuals to receive EPSRC funding, see the EPSRC Funding Guide:

<https://www.epsrc.ac.uk/funding/howtoapply/fundingguide/>

As this call is a targeted funding opportunity provided by EPSRC, higher education institutions, and some research council institutes and independent research organisations are eligible to apply. A list of eligible organisations to apply to EPSRC is provided at: <http://www.rcuk.ac.uk/funding/eligibilityforrcs/>

How to apply

Applicants submitting an outline are strongly advised to discuss their proposal with EPSRC during the initial stages of the outline preparation.

Submitting an outline application

You should prepare and submit your outline proposal using the Research Councils' Joint electronic Submission (Je-S) System (<https://je-s.rcuk.ac.uk/>).

When adding a new proposal, you should select:

- Council 'EPSRC'
- Document type 'Outline Proposal'
- Scheme 'Outline'
- On the Project Details page you should select the 'IRC: Targeted Therapeutic Delivery 2017 Outline' call.

Note that clicking 'submit document' on your proposal form in Je-S initially submits the proposal to your host organisation's administration, not to EPSRC. Please allow sufficient time for your organisation's submission process between submitting your proposal to them and the call closing date. EPSRC must receive your application by **16:00 on 02 November 2017**.

Guidance on the types of support that may be sought and advice on the completion of the research proposal forms are given on the EPSRC website (<https://www.epsrc.ac.uk/funding/howtoapply/>) which should be consulted when preparing all proposals.

The outline proposal should consist of a four-page case for support and an optional two-page infrastructure strategy plan.

Your outline must be submitted via Je-S by **16.00 on 02 November 2017**.

Guidance on writing your outline application

Your outline application should include:

- Je-S application form, filling in your name, institution and proposal details (see 'Assessment process below'). The panel will not see this form.
- Case for Support (four pages), being careful not to give away your identity or institution(s) see 'Assessment Process' for further guidance.
- Infrastructure Strategy Plan (two pages), annex to the case for support and only needs to be included if resources for equipment over £10,000 are requested;

The outline case for support should clearly articulate, under the following headings:

- Overall Vision for the IRC:
 - Overall vision for the IRC should be explained succinctly;
 - Explain the key challenges in targeted therapeutic delivery that the IRC will address.
- Research Challenge:

- Introduce the proposed research programme and put it into the context of existing investments and activities.
- Explain why the proposed research is timely and innovative.
- Outline how this delivers the EPSRC strategy for the relevant research areas as outlined on the EPSRC website.
- Pathway to Impact
 - Outline the key features of the pathway to impact for the research
 - Highlight the types of bespoke activity that will be required to deliver impact for the IRC and include an estimate of the requested resource.
- Resources Requested
 - Please include a resources table that outlines the resources requested (due to the anonymous aspect of this stage your Je-S form will not be seen by the assessment panel) Applicant will provide a more detailed breakdown at the invited full proposal submission.
 - Identify the amount of time (%FTE) the principal and co-investigators will be spending on the project. It is important not to underestimate the amount of time the proposed Director will need to spend running the IRC which EPSRC expects to be at least 40%FTE;
 - An estimated level of resource for directly incurred costs should be provided. Please include the Pathway to Impact costs as part of the total request.
 - Please note that a variance of more than $\pm 10\%$ between costings as on the outline and a full proposal without written prior approval from EPSRC will result in the full bid being rejected.

The Infrastructure Strategy Plan should articulate the following:

- Description, Cost, Support and Contribution:
 - A description of the equipment over £10,000 that is being requested, with an estimated cost indicating the level of contribution you would expect from the involved research organisations and project partners and how much would be requested from EPSRC. Please separate out items that you consider should be classed as instrument development with a brief rationale as to why;
- Strategic Case:
 - An explanation of why the requested equipment is essential to achieve the vision of the EPSRC IRC.
- Ensuring Maximum Value:

- A description of how this complements and adds value to the equipment that already exists within the institutions in the EPSRC IRC and how this fits into the national provision;
- Usage:
 - Information on how the EPSRC IRC would maximise usage of the applied-for equipment.

Assessment

A two-stage assessment process will be used

- **Stage 1: Outline Stage:**
All Outlines will be considered anonymously by an expert peer review panel, which will rank the proposals based on the assessment criteria. It is the lead institution's responsibility to make sure that their application contains no information that would allow the investigators and institutions to be identified. EPSRC will decide, based on the advice of the peer review panel, which outlines to invite to the full proposal stage.
- **Stage 2: Full proposal with postal peer review and an expert interview panel:**
Please note that additional guidance for full proposals will be issued at the invitation stage.

Outline Assessment Process

Anonymous outline proposals will be assessed by an expert peer review panel based solely on the information provided in the Case for Support and the permitted accompanying attachments. The peer review panel will score applications according to the assessment criteria. EPSRC will decide, based on the advice of the peer review panel, which proposal to invite to the full stage.

Applications must be anonymous. Applicants must therefore be extremely careful not to give away their identity or institution in the Case for Support. EPSRC reserves the right to reject proposals where the identity of the applicant(s) and/or institution(s) is revealed or can be inferred. The panel will not see the Je-S form.

As this stage of the call is anonymous, the emphasis of the outline application is focused on the fit to the scope of the call, the vision and the appropriateness of the resources requested. Further details such as leadership qualities of the IRC director, level of commitment from the universities, capabilities of the multi-disciplinary research team to deliver the aims and objectives of the IRC, will be assessed at the full invited submission stage.

Outline Assessment Criteria

The assessment criteria at the outline stage are given below:

- Research quality;
- National importance;
- Fit to call;

- EPSRC IRC vision;
- Alignment to Healthcare Theme strategy and portfolio;
- Pathway to impact
- If appropriate the infrastructure strategy plan.

Decisions made by EPSRC will be final.

Involvement of GSK and AZ in delivering the peer review of the outline stage:

The peer review of the outline proposals will be delivered in partnership with AstraZeneca and GlaxoSmithKline. This is to ensure that all shortlisted proposals are addressing challenges of genuine need and to reduce the number of speculative approaches these companies receive for project partner support. We also aim to provide a more level playing field for applicants whether or not they have previous experience of collaborating with either of these two companies.

The involvement of AZ and GSK in the outline panel will still enable these companies to work with shortlisted applicants in the preparation of a full bid. There will be no obligation on applicants to partner with AZ or GSK (and vice versa) should they be invited to submit a full proposal. Nor is this intended to preclude partnership with other project partners, including other businesses. There will be an opportunity for other businesses to register their interest with EPSRC when the call opens by emailing Healthcare@epsrc.ac.uk.

Key dates

Activity	Date
Deadline for Outline Proposals	02 November 2017
Outline Expert Panel	Mid-December 2017
Deadline for Full Proposals	13 March 2018
Full Proposal Postal Peer Review	April – June 2018
Full Proposal Expert Interview Panel	Mid-July 2018

* EPSRC aims to adhere to the key dates as published, however there may be exceptions where the sift, prioritisation or interview meeting may have to change due to panel member availability.

Contacts

- Dr Stephanie Newland (Email: Stephanie.Newland@epsrc.ac.uk - Phone: 01793 444 134)
- Dr Annette Bramley (Email: Annette.Bramley@epsrc.ac.uk - Phone: 01793 444 4074)
- Healthcare Technologies Theme (Healthcare@epsrc.ac.uk)

Change log

Name	Date	Version	Change
Stephanie Newland	[when created]	1	N/A

Appendices

Je-S attachments Check List

Standard:

Attachment Type	Maximum Page length	Mandatory/Optional	Extra Guidance
Case for Support	4 pages	M	Comprising of vision and rationale for the IRC, national importance, pathway to impact, resources requested, user engagement strategy, initial research projects, management
Infrastructure strategy plan	2 pages	As required by EPSRC	Only required if requesting equipment over £10K.
Proposal Cover Letter	No page limit	Optional	The cover letter can be used to highlight any important information to EPSRC. This attachment type is not seen by

			reviewers or panel members.
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Please ensure you adhere to the above attachment requirements when submitting your proposal. Any missing, over length or unnecessary attachments may result in your proposal being rejected.